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**REMARKS**

The Examiner's Action of June 27, 2003 has been received and its contents carefully considered. Reconsideration is respectfully requested in view of the Amendments and the following comments.

Claims 18-29 are currently pending in the instant application. Claims 1-17 and 30 have been cancelled without prejudice or disclaimer of the subject matter thereof. Claims 18, 19, 20, 22, 23, 26, 29 have been amended.

**I. Election/Restriction Requirement**

Claims 1-17 have been cancelled without prejudice or disclaimer of the subject matter thereof for being drawn to a non elected invention.

**II. Rejection under 35 USC 112, Second Paragraph**

Claims 18-30 have been rejected under the second paragraph of Section 112 for being indefinite. Reconsideration is respectfully requested in view of the amendments and the following comments.

- I. The Examiner has taken exception with the use of the word "predetermined" in claims 18 and 19, citing Seagram v. Marzall. The Examiner, citing the latter, notes that, if "predetermined" means "determined beforehand," it is indefinite. It is submitted, however, that the Seagram case is not applicable to the instant claims 18 and 19. In Seagram, the only definition provided for "predetermined" was "determined beforehand." In the instant application, the predetermined roughness and flatness of the thermal coupling surface are described in the

specification as being in a range to allow attachment of the diamond heat spreader to a thermal interface material. See paragraph 19. Also, as set forth in paragraph 27 of the specification, for a diamond integrated heat spreader, the RMS roughness of the metal surface 11 may be about 10 microns or less, and its flatness may be in the order of about 1.5 mil ( $10^{-3}$  inch) per inch. Thus, the specification provides a definition for “predetermined” roughness and flatness that is much more than merely “determined beforehand.” As a result, it is submitted that use of the word “predetermined” in the claims does not introduce indefiniteness of those claims.

- II. Regarding whether the “thermal covering layer” is part of the “covering layer,” please see specification at page 7, paragraph 26, and at page 8, paragraph 30. The thermal covering layer is in fact a surface of the covering layer as set forth in the specification. Regarding whether the roughness of the diamond surface and the provision of a covering layer are on one or more surfaces, please refer to the amendments to claim 18. The claim now recites a chemical vapor deposited diamond layer having an unpolished free surface. It is also noted that “exhibiting roughness” would be the same as “possessing roughness.”
- III. Regarding points III and IV and the questions concerning claims 19 and 20, please refer to the amendments to those claims.
- IV. See III above.
- V. See I above.
- VI. Regarding points VI and VII, please see amendments to claim 23.
- VII. See VI above.

VIII. Regarding point VIII, please see amendment to claim 26.

IX. Regarding point IX, please see amendments to claim 29. In addition, it is clear that claim 29 has been written to fall under the purview of 35 USC 112, sixth paragraph, and does constitute means plus function language, the function being that of providing a thermal coupling surface.

X. Regarding point X, please note that claim 30 has been cancelled.

In view of the above, it is submitted that the pending claims 18-29 are definite, and the Examiner is, therefore, respectfully requested to reconsider and withdraw his rejection of the claims under the second paragraph of Section 112.

**II. Rejections under 35 USC 102(e) and (b)**

The Examiner has made a series of anticipation rejections under subsections (e) and (b) of Section 102.

For prior art to anticipate under § 102, every element of the claimed invention must be identically disclosed, either expressly or under principles of inherency, in a single reference. Corning Glass Works v. Sumitomo Electric, 9 U.S.P.Q.2d 1962, 1965 (Fed. Cir. 1989). The exclusion of a claimed element, no matter how insubstantial or obvious, from a prior art reference is enough to negate anticipation. Connell v. Sears, Roebuck & Co., 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983) (“Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim. (Citation omitted) A prior art disclosure that ‘almost’ meets that standard may render the claim invalid under § 103; it does not ‘anticipate’.”) ...if the claim does not literally read, there is no anticipation. Lewmar Marine, Inc. v. Bariant Inc., 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987).

It is submitted that the cited references are missing claimed elements of the instant invention, and are, as such, inapplicable to the claims. Applicants respectfully request, therefore, that the anticipation rejections of the claims be withdrawn.

**A. Petkie**

Claims 18-21, 23, 24, 25, 29 and 30 have been rejected under Section 102(e) as being anticipated by Petkie. Reconsideration is respectfully requested in view of the Amendment and the following comments.

Petkie pertains to a multi-layer brazeable metallization structure for diamond components and to a method for producing the same.

Petkie does not disclose a diamond heat spreader comprising vapor deposited diamond layer having an unpolished free surface on which a covering layer or a means for providing is adhered, as respectively set forth in independent claims 18 and 29 of the present invention. In Petkie, the CVD diamond surface is polished.

In view of the above, it is submitted that Petkie is not applicable to the instant invention as set forth in independent claims 18 and 19. Petkie is further inapplicable to dependent claims 19-28 by virtue of their dependence from independent claim 18, and further for the particular additional features that they recite.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 102(e) in view of Petkie.

**B. Thorpe et al.**

Claims 18-23, 25, 29 and 30 have been rejected under Section 102(b) as being anticipated by Thorpe et al. Reconsideration is respectfully requested in view of the Amendment and the following comments.

Thorpe et al. pertain to the provision of a support article comprising a diamond substrate which permits the use of its diamond substrate for long term, high deposition rate and high temperature epitaxial growth of diamonds on the diamond substrate.

Thorpe et al. do not disclose a diamond heat spreader as set forth in independent claims 18 and 29. Thorpe et al.'s structure is a support and not a heat spreader. In addition, Thorpe et al. do not disclose a CVD diamond layer as set forth in independent claims 18 and 29. In addition, the diamond substrate in Thorpe et al. is not disclosed as having an unpolished free surface, contrary to independent claims 18 and 29. Moreover, the layers covering the diamond substrate in Thorpe et al. do not have a thermal coupling surface, contrary to independent claims 18 and 29.

In view of the above, it is submitted that Thorpe et al. are not applicable to the instant invention as set forth in independent claims 18 and 19. Thorpe et al. are further inapplicable to dependent claims 19-28 by virtue of their dependence from independent claim 18, and further for the particular additional features that they recite.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 102(b) in view of Thorpe et al.

**C. Hall et al.**

Claims 18-23, 25, 29 and 30 have been rejected under Section 102(e) as being anticipated by Hall et al. Reconsideration is respectfully requested in view of the Amendment and the following comments.

Hall et al. pertain to a polycrystalline diamond heat spreader for use in electronic devices. The polycrystalline diamond is produced by the high-pressure, high-temperature sintering method.

Hall et al. do not disclose a diamond heat spreader comprising vapor deposited diamond layer, as set forth in independent claims 18 and 29 of the present invention. In Hall et al., the diamond is formed via sintering.

In view of the above, it is submitted that Hall et al. are not applicable to the instant invention as set forth in independent claims 18 and 19. Hall et al. are further inapplicable to dependent claims 19-28 by virtue of their dependence from independent claim 18, and further for the particular additional features that they recite.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 102(e) in view of Hall et al.

**D. Shiomi et al.**

Claims 18-21, 23, 25, 29 and 30 have been rejected under Section 102(b) as being anticipated by Thorpe et al. Reconsideration is respectfully requested in view of the Amendment and the following comments.

Shiomi et al. pertain to a diamond heat sink.

Shiomi et al. do not disclose a diamond heat spreader a chemical vapor deposited diamond layer having an unpolished free surface on which a covering layer or a means for providing is adhered, where the covering layer or means for providing have a thickness just enough to cover the roughness of the free surface of the diamond layer, as respectively set forth in independent claims 18 and 29 of the present invention. In Shiomi et al., the shown heat sink presents a relatively large bond-line thickness, as seen in the figures, for example in Figs. 1G, 2, 5A-5C, 7A-7C. The thickness of the solder layer 7 covering the CVD diamond layer is much more than a minimum thickness required to cover a roughness of the diamond layer.

In view of the above, it is submitted that Shiomi et al. are not applicable to the instant invention as set forth in independent claims 18 and 19. Shiomi et al. are further inapplicable to dependent claims 19-28 by virtue of their dependence from independent claim 18, and further for the particular additional features that they recite.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 102(b) in view of Shiomi et al.

#### E. Chrysler et al.

Claims 18-21, and 23-30 have been rejected under Section 102(e) as being anticipated by Chrysler et al. Reconsideration is respectfully requested in view of the Amendment and the following comments.

Chrysler et al. pertain to a heat dissipating structure in an IC including an IHS forming a thermal interface made of a diamond, diamond composite or graphite. The thermal interface may be covered with adhesion layers to provide a more solderable surface. More layers could be provided on the adhesion layers.

Chrysler et al. do not disclose a diamond heat spreader a chemical vapor deposited diamond layer having an unpolished free surface on which a covering layer or a means for providing is adhered, where the covering layer or means for providing have a thickness just enough to cover the roughness of the free surface of the diamond layer, as respectively set forth in independent claims 18 and 29 of the present invention. In Chrysler et al., there is nothing noted regarding a minimum number of layers on the diamond just enough to cover the roughness of the diamond.

In view of the above, it is submitted that Chrysler et al. are not applicable to the instant invention as set forth in independent claims 18 and 19. Chrysler et al. are further inapplicable to dependent claims 19-28 by virtue of their dependence from independent claim 18, and further for the particular additional features that they recite.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 102(e) in view of Chrysler et al.

**F. Mahajan et al.**

Claims 18-21 and 23-30 have been rejected under Section 102(e) as being anticipated by Mahajan et al. Reconsideration is respectfully requested in view of the Amendment and the following comments.

Mahajan et al. pertain to a heat dissipating structure in an IC including an IHS forming a thermal interface made of a diamond, diamond composite or graphite. The thermal interface may be covered with adhesion layers to provide a more solderable surface. More layers could be provided on the adhesion layers.

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Mahajan et al. do not disclose a diamond heat spreader a chemical vapor deposited diamond layer having an unpolished free surface on which a covering layer or a means for providing is adhered, where the covering layer or means for providing have a thickness just enough to cover the roughness of the free surface of the diamond layer, as respectively set forth in independent claims 18 and 29 of the present invention. In Mahajan et al., there is nothing noted regarding a minimum number of layers on the diamond just enough to cover the roughness of the diamond.

In view of the above, it is submitted that Mahajan et al. are not applicable to the instant invention as set forth in independent claims 18 and 19. Mahajan et al. are further inapplicable to dependent claims 19-28 by virtue of their dependence from independent claim 18, and further for the particular additional features that they recite.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 102(e) in view of Mahajan et al.

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**CONCLUSION**

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration, withdrawal of all grounds of rejection and issuance of a Notice of Allowance are solicited.

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. 11-0600. The Examiner is invited to contact the undersigned at (202) 220-4296 to discuss any matter regarding this application.

Respectfully submitted,  
KENYON & KENYON

Date: 03-26-03



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